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November 19, 2004

Docket No. 50-271

BVY 04-124

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

References: (1) Letter, Alan B. Wang to Michael Kansler, NVY 04-117, dated October 5, 2004

Subject: **Vermont Yankee Nuclear Power Station**
Response to Request for Additional Information Concerning a
10CFR2.206 Petition Related to Spent Fuel Rod Pieces

Reference (1) was provided to Entergy Nuclear Operations, Inc. (Entergy) requesting further information relative to a 10CFR2.206 petition concerning spent fuel rod pieces.

Provided in the attachment to this letter is our response to these questions.

There are no new commitments being made in this submittal.

If you have any questions or require additional information, please contact Mr. James M. DeVincentis at (802)258-4236.

Sincerely,

James M. DeVincentis
Manager, Licensing
Vermont Yankee Nuclear Power Station

Attachment (1)

4E03

cc: Mr. Richard B. Ennis, Project Manager
Project Directorate I
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Mr. Samuel J. Collins
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Vermont Yankee Nuclear Power Station
Attachment to BVY 04-124

1. (a) Other than the comparison of the lengths of the pieces, what other evidence do you have that the misplaced pieces were located?

Answer: The two items contained in the General Electric (GE) liner at the Vermont Yankee (VY) Spent Fuel Pool are the two fuel rod pieces based on significant analysis and evaluation of the documentation, physical inspection results, and computational analysis. The following forms the basis for this conclusion that the two items in the liner are the two subject fuel rod pieces:

- VY procured a liner in 1979 from GE to store fuel rod pieces prior to their actual transfer to a liner in 1980.
- The GE liner containing the fuel rod pieces is of the same vintage and configuration as the GE liner that would correspond to the one opened on July 13, 2004.
- Fuel records document the transfer of the fuel rod pieces from the bucket to the liner in 1980.
- Photographs and videotapes from various time periods confirm the presence of the liner in the Spent Fuel Pool in the southwest corner and on the channel storage rack, where the liner was found in July 2004.
- The radiation levels of both fuel rod pieces are within expected accuracy based on measurements and calculation.
- Visual and physical inspection of the fuel rod pieces confirms that the items in the liner are the fuel rod pieces.
- The lengths of the fuel rod pieces in the liner are within the expected accuracy of the misplaced fuel pieces.
- The diameter of the fuel pieces are the same as a fuel rod.

(b) Can you verify that the diameters of all the broken pieces are consistent with each other?

Answer: Based on visual inspection of the two subject fuel pieces, they appear to be the same diameter. The two fuel pieces are standing up next to each other in a liner.

The subject fuel rod pieces and parent fuel rod pieces are in two different locations; thus an exact visual comparison of the diameters is not possible.

(c) Have any pieces or segments of fuel rods ever been sent to General Electric at Vallecitos or other facilities?

Answer: Yes. VY shipped fuel rod segments and pieces to the GE Vallecitos Nuclear Center.

(d) Have you ever received any fuel pieces or segments from Vallecitos or other facilities?

Answer: No. There are no records of such shipments.

The following is the Vallecitos Nuclear Center response to VY's inquiry regarding spent fuel received by Vallecitos from VY.

> "Due to the destructive nature of post irradiation examination, Vallecitos Nuclear Center does not return spent fuel received for examination to the utilities. After examination, spent nuclear fuel is stored on site until disposal."

(e) Can you confirm the sections of fuel rods in the canister were pieces and not segments?

Answer: Based on records and visual inspection, the fuel rods appear to be pieces and not segments (machine cut).

2. (a) Describe Entergy's process for the movement and control of fuel rods during your reconstitution efforts.

Answer: During reconstitution, a fuel rod is removed from an assembly and temporarily stored in an empty location in a fuel rod storage container or another fuel assembly. A donor fuel rod or a new fuel rod may be inserted into the empty position where the fuel rod was removed. These fuel rod moves would be recorded on a fuel rod move sheet. This information is contained in various documents and reports.

Every fuel rod moved from one assembly to another is tracked and documented, and every fuel rod can be traced back to where it originated from.

(b) How has Entergy verified that individual fuel rod movements were properly documented and controlled?

Answer: During the Special Nuclear Material (SNM) Investigation this past year (2004), Entergy selected 7 fuel assemblies to perform an inspection and

verification of the fuel rods that had been moved some 20 years ago and compared the results against Entergy's fuel records. There were no discrepancies.

(c) How have all individual rods removed from an assembly or moved from one assembly to another been accounted for?

Answer: Individual fuel rods moved from one assembly to another are tracked on fuel rod transfer forms and inventory documentation. During the SNM Investigation this past year (2004), Entergy selected 7 fuel assemblies to perform a physical inspection and verification of vacant fuel rod positions, broken fuel rods, and full length fuel rods that had been moved some 20 years ago and compared the results against Entergy's fuel records. There were no discrepancies. In addition, during the SNM Investigation this past year (2004), records of individual fuel rods moves were reviewed and no discrepancies were found.

(d) Describe any other conditions where fuel has been handled as less than complete assemblies (e.g. pieces, segments, pellets, rods, etc.) not addressed in the above questions, and how this fuel was accounted for.

Answer: VY has two cages (i.e. containers) of fuel rods. These fuel rods came from reconstitution of early 1970's fuel. In addition, several fuel pellets were "washed out" of one damaged fuel rod during operation in the 1980's. In all cases, the material was accounted for in the fuel inventory and has been documented accordingly.

(e) How many assemblies have been involved in the reconstitution efforts?

Answer: In VY's history, approximately one hundred fuel assemblies have been involved in reconstitution efforts. Currently there are 3,155 fuel assemblies at VY including fuel in the reactor.

3. Provide the root-cause analysis for this event.

Answer: The root cause in a summary format was provided to the NRC in Supplement No.1 to LER 2004-002 (reference: BVY 04-103, dated 9/29/04). This LER Supplement was made available to the public by the NRC.